



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 26.4.2007  
COM(2007) 212 final

**COMMUNICATION FROM THE COMMISSION TO THE COUNCIL  
AND THE EUROPEAN PARLIAMENT**

**European Space Policy**

{SEC(2007) 504}  
{SEC(2007) 505}  
{SEC(2007) 506}

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## 1. INTRODUCTION

*"In the middle of the 20th century, we saw our planet from space for the first time. Historians may eventually find that this vision had a greater impact on thought than did the Copernican revolution of the 16th century, which upset the human self-image by revealing that the Earth is not the centre of the Universe. From Space, we see a small and fragile ball dominated not by human activity and edifice but by a pattern of clouds, oceans, greenery and soils"<sup>1</sup>.*

Space helps us understand the fragility of our planetary systems and their complex interrelation. It also gives us the tools to address many other challenges of the 21<sup>st</sup> century. It is essential and urgent to make effective use of these tools in the implementation of a wide range of policies. Space-based systems provide improved weather forecasts, satellite broadcasting and advanced navigation services; they open up new opportunities in tele-education and tele-medicine. They are critical to key areas of the economy: communication systems, electrical power grids, and financial networks all rely on satellite timing for synchronisation. Satellite communications will bring benefits for every citizen by providing cost-effective solutions for services such as high definition TV, broadband or mobile TV, in particular for remote and rural areas. Space also contributes to the knowledge-based society, providing the tools for understanding our planet, its origins, its environment, the Solar System and the Universe. Space can contribute to European cohesion and identity, reaching citizens across all countries. It can also provide valuable support to European external policies, particularly humanitarian aid and development policy.

Space in Europe has been successfully developed over 30 years in the framework of ESA. However, at a time when new powers are emerging with high ambitions and capabilities as regards space, Europe cannot afford to lose out on securing the potential economic and strategic benefits of space for its citizens. Europe must make further efforts to preserve and improve its global competitive position. It must remain a leader in space systems and hence an indispensable international partner providing first class contributions to global initiatives.

With the arrival of the new millennium, the need to establish a comprehensive European Space Policy to respond to these challenges has been widely recognised by the EU, ESA, and their Member States it has been endorsed by EU Heads of State and Government and was affirmed at the 2<sup>nd</sup> meeting of the Space Council in 2005. The European Space Policy should allow the European Union, the European Space Agency (ESA) and their Member States to increase coordination of their activities and programmes, and organise their respective roles relating to space, providing a more flexible framework to facilitate Community investment in space activities. This is equally true in the areas of security and defence space programmes and in the integration of space policy into a range of the EU's external relationships.

Important steps have been taken to strengthen the relationship between ESA and EU, including the establishment of the EC-ESA Framework Agreement<sup>2</sup> and launching the European flagship projects Galileo and GMES<sup>3</sup>.

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<sup>1</sup> Our Common Future: Report of the World Commission on Environment and Development, UN 1987

<sup>2</sup> Council Decision on the signing of the Framework Agreement between the European Community and the European Space Agency (12858/03 RECH 152 7 October 2003)

<sup>3</sup> Global Monitoring for Environment and Security

The Commission set out the preliminary elements of the space policy in its communication of May 2005<sup>4</sup>. The Competitiveness Council of the EU and the Ministerial Council of the ESA, meeting in June 2005 under the Framework Agreement as the 'Space Council', responded by setting out guidance on the content and nature of the European Space Policy and the accompanying preliminary elements of a European Space Programme.

Accordingly, this document has been compiled in consultation with the Member States of both organisations and other interested stakeholders. This first ever European Space Policy is a joint document of the European Commission and the Director General of the ESA.

## 2. STRATEGIC MISSION OF THE EUROPEAN SPACE POLICY

The development of a truly European Space Policy is a strategic choice for Europe, if it does not want to become irrelevant. **Space systems are strategic assets demonstrating independence and the readiness to assume global responsibilities. Initially developed as defence or scientific projects, they now also provide commercial infrastructures on which important sectors of the economy depend and which are relevant in the daily life of citizens. However the space sector is confronted with high technological and financial risks and requires strategic investment decisions.**

**Europe needs an effective space policy to enable it to exert global leadership in selected policy areas in accordance with European interests and values.** To fulfil such roles the EU increasingly relies on autonomous decision-making, based on space-based information and communication systems. Independent access to space capabilities is therefore a strategic asset for Europe.

The space sector is a driver and enabler for the Partnership for Growth and Jobs. Space is a €90bn market worldwide, growing at 7 per cent per annum. European companies secure 40 per cent of the commercial markets for satellite manufacturing, launch and satellite services. Space also offers great scope for high technology innovation in selected areas opening the possibility for the development of lead markets.

To respond to the challenges described above, **the strategic mission of a European space policy** will be based on the peaceful exploitation of Outer Space by all states and will seek:

- to develop and exploit space applications serving Europe's public policy objectives and the needs of European enterprises and citizens, including in the field of environment, development and global climate change;
- to meet Europe's security and defence needs as regards space;
- to ensure a strong and competitive space industry which fosters innovation, growth and the development and delivery of sustainable, high quality, cost-effective services;
- to contribute to the knowledge-based society by investing strongly in space-based science, and playing a significant role in the international exploration endeavour;

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<sup>4</sup> European Space Policy - Preliminary Elements COM(2005) 208 final, 23.05.2005

- to secure unrestricted access to new and critical technologies, systems and capabilities in order to ensure independent European space applications.

To achieve this strategic mission will require the EU, ESA and their Member States to improve the efficiency and effectiveness of their space activities **by taking significant new steps in:**

- establishing a **European Space Programme and the coordination** of national and European level space activities , with a user-led focus;
- **increasing synergy between defence and civil space** programmes and technologies, having regard to institutional competencies; and
- developing a **joint international relations strategy** in space.

### 3. APPLICATIONS

**The key to securing the maximum political, economic and social return from investment in space technologies lies in the development and exploitation of space applications, meeting the objectives of EU policies and the needs of European enterprises and citizens.** The evolution of European user needs requires the development of integrated space systems, seamlessly linking satellite and terrestrial telecommunications, positioning and monitoring in areas of strategic, economic and societal value.

#### 3.1. Satellite navigation

**Europe is committed to establishing a sustainable global civil navigation satellite system under the control of the EU.** Global markets for satellite navigation equipment and services are estimated to reach €400bn by 2025. Following the establishment of the EGNOS<sup>5</sup>, GALILEO has been developed as a joint initiative of the EU and ESA. Being a strategic infrastructure<sup>6</sup>, GALILEO incorporates in its management structures all the necessary instruments to ensure the security of the system.

Governance structures will have to be adapted to ensure the best value for money in the deployment and operation of GALILEO, and the most effective involvement of both public and private partners. Many non-EU countries are seeking to become partners in the programme. Collaboration will be based on the principles of non-discrimination and loyal co-operation.

Technological support for GALILEO will continue through applications research and a coherent system evolution programme. In order to provide safe and guaranteed applications, the necessary framework in terms of certified services and products, global standards and interference monitoring capabilities has to be implemented.

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<sup>5</sup> European Geostationary Navigation Overlay Service

<sup>6</sup> European Council, Laeken, 14 December 2001

**It is essential to ensure that GALILEO will be deployed without further delay and that it strives to provide safe and state-of-the-art solutions. GALILEO will grant fair and non-discriminatory access and the continuity and safety of service.**

### **3.2. Earth observation**

**Autonomous access to information relating to environment, climate change and security is of strategic importance for Europe.** Substantial economic and social benefits are associated with improved use of Earth observation-derived information. It can be used to manage natural resources and to support timely preparation by public authorities in order to reduce the effects of adverse weather conditions and climate change, as well as for crisis management.

**GMES will improve Europe's monitoring and assessment capacity in environment policy and contribute to addressing security needs.** It will facilitate decision making at all levels of government by improving the evidence base in policy areas across all three pillars of the EU Treaty. Monitoring is also a key element of the fight against climate change. The Global Earth Observation System of Systems (GEOSS) aims at global synergy of Earth observations to which GMES represents the main European contribution. The scope of the mutual contribution between GMES and GEOSS will be embedded in the GMES international strategy.

**The Commission has set out a strategy for delivering GMES<sup>7</sup> according to the Council mandate<sup>8</sup>.** This will optimise planned European space and in-situ infrastructure and fill identified gaps to respond to the requirements of service users. Decisions already taken start the process of securing the availability of the space component, to be co-funded by ESA and the EU and coordinated and implemented by ESA. Europe will in parallel enhance its meteorological infrastructures and services.

**For GMES to become fully operational, the EU and Member States will establish appropriate funding arrangements, policies, operational infrastructures and management arrangements to ensure sustainable services responding to identified user needs.**

### **3.3. Satellite communications**

**Satellite communications, driven by private sector investments, most notably from the broadcast and telecommunications sector, represent 40 % of the current revenues of the European space sector. They are an integral part of the Information and Communication Technologies, such as the modernisation programme of the Air Traffic Management in Europe.** Cost-effective communications systems rely on a complementary mixture of satellite and terrestrial networks. Operational applications are market driven. European companies are successful in global markets for both fixed and mobile satellite services, which exhibit high value-added characteristics, strong productivity growth and strong profit margins. Many new applications will emerge in the coming years, associated with high risk and long-term investment.

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<sup>7</sup> 'Global Monitoring for Environment and Security (GMES): From Concept to Reality' - COM(2005) 565

<sup>8</sup> Council Resolution 2001/C 350/02 (13.11.2001)

**European policies will facilitate the introduction of innovative services, including aggregating demand in remote and rural areas in order to permit satellite services to be as viable as terrestrial solutions. The space industry's technical capabilities need to keep pace with global competitors, many of which are underpinned by defence investments. The EU will invest in advancing technology developments to achieve convergence and interoperability between terrestrial and satellite-based networking sectors.**

### 3.4. Security and defence

**The EU Security Strategy<sup>9</sup> highlighted that Europe faces constantly evolving threats which are more diverse, less visible and less predictable.** The Commission has identified security of EU citizens as one of the three main objectives in its work programme. To tackle these constantly evolving threats requires a mixture of civilian and military solutions. Space assets provide a significant contribution to this.

**The EU approach to crisis management emphasises the synergy between civilian and military actors. Space system needs for planning and conducting civilian and military Crisis Management Operations overlap.** Many civilian programmes have a multiple-use capacity and planned systems such as GALILEO and GMES may have military users. The Member States in the Council<sup>10</sup> have identified Europe's generic space system needs for military operations and stressed the necessary interoperability between civilian and military users.<sup>11</sup> Military capability will continue within the remit of Member States. This should not prevent them from achieving the best level of capability, within limits acceptable to their national sovereignty and essential security interests. Sharing and pooling the resources of European civilian and military space programmes, drawing on multiple use technology and common standards, would allow more cost-effective solutions.

**The economy and security of Europe and its citizens are increasingly dependent on space-based capabilities which must be protected against disruption. Within the framework of existing EU principles and institutional competencies, Europe will substantially improve coordination between its defence and civilian space programmes, while retaining primary end-user responsibility for funding.**

## 4. FOUNDATIONS

### 4.1. Science and Technology

**The EU, ESA and their Member States have to continue to invest strongly to maintain leadership in space-based science. In this way it will** constantly stretch the boundaries of technology, feed through to applications and so directly contribute to industrial competitiveness. **European scientists have identified their current priorities.** For the science of space, they are set out in ESA's 'Cosmic Vision' and focus on the conditions for life and planetary formation and the origins and fundamental laws of the Universe. For science in space, priorities are basic and applied research in disciplines such as fluid and combustion physics, materials sciences and human physiology. Priorities for Earth science

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<sup>9</sup> A secure Europe in a better world – The European Security Strategy

<sup>10</sup> 'ESDP and Space'

<sup>11</sup> European Council Committee for Civilian Crisis Management.

have been agreed in ESA's "Living Planet" programme and FP7 and include polar ice, ocean circulation and the physics of the Earth's interior. Science frequently involves international cooperation, leading later to more strategic relationships. In addition, strengthening the foundations of space science and technology has been included in EU's FP7.

**Europe will be ambitious in terms of innovation, identifying critical technologies and guaranteeing their funding.** Technology transfers must be closely monitored both for security and commercial reasons. Synergies with non-space technologies will be maximised, with appropriate support for space qualification of new technologies. New technology developments may provide important niche opportunities for EU Member State industries, notably in Central and Eastern Europe. The ESA-led process of harmonising technology development programmes provides transparency on research across Europe and paves the way for improved coordination. The EU will engage in complementary activities through FP7.

**The maintenance and development of know-how across the European space industry is essential** if systems are to be developed based on European policy requirements and industry is to compete successfully. Space technology is institutionally driven. Countries such as China and India are rapidly mastering space technology, becoming challenging competitors on the commercial market. The goal of Europe's technology development strategy will be to ensure sustained and coordinated investment while achieving a better balance between technological independence, strategic cooperation and reliance on market forces.

**Europe faces a severe reduction in the interest in Science, Engineering and Technology (SET) careers among young people as well as to pursue SET careers.** Without a sufficient quantity and quality of human capital in SET related areas, the knowledge-based economy in Europe will be jeopardised. Education programmes and creative learning environments developed around cutting edge space projects inspire and motivate students to pursue careers in SET<sup>12</sup>, as well as widening the understanding of science among the public.

Space-based activities are strongly evocative of frontier technology and have the potential to attract the interest of the younger generations. The Commission is committed to increase the interest of young people in SET. To this end, recommendations are discussed in the High Level Group on Science. The ESA 'European Space Education Resource Office' (ESERO) project is already working with educational experts in several Member States to supply the specific educational needs of the region concerned and to get easy access to the already-existing national networks. Europe will build further on this and other links with the education sector.

**The pursuit of world class science is crucial to expand the knowledge base; to develop new technologies and applications; and to attract young people into science and engineering.**

#### **4.2. International Space Station (ISS) and Exploration of the Solar System**

**The international exploration endeavour has a significant political appeal in a vision of European identity**, due to its potential to contribute to the creation of new knowledge, to foster innovation and to engage new companies and research organisations in space activities.

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<sup>12</sup> 'Pupils' and Parents' Views of the School Science Curriculum', King's College London, January 2000

The US, China and Russia have moved forward with ambitious space exploration plans. Now, Europe needs to urgently respond to these challenges.

**Human spaceflight and exploration are emblematic aspects of space.** The ISS offers unique opportunities for fundamental and applied research using the conditions available in space. The European participation with the Columbus laboratory module and the Automated Transfer Vehicle and the presence of European crew secures a visible European role in this venture. The knowledge and insights gained on the ISS are translated into innovative applications for the benefit of people on Earth, e.g. for the development of new materials and new therapies in medicine, and in the preparation for future planetary missions.

**Europe needs to achieve optimum utilisation of the International Space Station; prepare for a visible, affordable and robust exploration programme, involving the development and demonstration of innovative technologies and capabilities and the robotic exploration of Mars, to search for evidence of life and understand the planet's habitability.**

#### 4.3. Access to space

**Access to space requires stable political support for a sustained European launcher programme,** ensuring availability of the related ground infrastructure. Investments will be made to improve existing launchers and develop new launcher systems, based on an evaluation of the long-term options for strategic cooperation. Continued commercial success in world markets is crucial to ensure affordability. But a relatively small and open domestic institutional market exposes the European launcher sector to severe peaks and slumps in the commercial market, putting the industry at risk.

**Europe needs to take advantage in a coherent way of the launcher assets under its control.** The decision concerning launch services for ESA missions, taken during ESA's 2005 Ministerial Council, was an important step. The European Space Policy will stimulate demand for applications satellites and launch services. Progressively, a flexible range of launchers will be made available through a single operator from the European spaceport Guyana Space Centre, with the ESA-developed Vega launcher and the Russian Soyuz launcher joining Ariane 5.

**Independent and cost-effective access to space needs to remain a strategic goal for Europe, which will look first to its own launcher resources when defining and executing European programmes, based on cost-efficiency, reliability and mission suitability.**

### 5. A COMPETITIVE EUROPEAN SPACE INDUSTRY

A competitive European space industry is of strategic importance. Europe needs strong and globally competitive companies in the development and manufacture of space systems and the provision of satellite capacity and value-added services. To achieve this goal it is essential that European public policy actors define clear policy objectives in space activities and invest public funds to achieve them. This public investment could help create a critical mass stimulating further public and private investment. A focused industry policy for space will also stimulate companies competing throughout the full value chain and help industry to manage the highly cyclical variations in demand typical of the space sector, invest in technology and ensure the maintenance of critical capabilities.

**An effective industry policy needs to cover many factors including regulation, public procurement and R&D.**

## **5.1. The regulatory framework**

**Several key factors determine the regulatory framework specific to the space sector:**

- **Standards give clarity regarding future markets, as a basis for investment.** Where public authorities are the major users of space, they have to drive the development of standards.
- **Full interoperability between national and European space and ground-based systems is urgent,** if Europe is to take maximum advantage of its different space assets. Interoperability and standardisation are intertwined issues.
- **Access policies, in particular data access policies, will be developed,** in keeping with the INSPIRE directive, to facilitate acquisition and exploitation by service providers and users, while at the same time guaranteeing the control of the dissemination of sensitive information through clear protocols.
- **Export and import controls are intrinsic to a sensitive sector** but should not unintentionally hinder the flow of technologies.
- **Pan-European licensing of services, spectrum and content is needed, as well as a more flexible, market-based regime for allocating radio spectrum.** An active approach by Member States to reallocating under-utilised spectrum that is currently allocated for public services and the military would permit demands between space-based and terrestrial infrastructures to be met in a more balanced way and allow safeguarding of scientific frequency bands<sup>13</sup>.

## **5.2. Public investment in space**

Space is a lead market in which public authorities can create conditions for industry-led innovation.<sup>14</sup> **The efficient and cost-effective aggregation of public policy needs for space is essential and urgent** to secure the potential economic benefits and attract further public and private investment. Intergovernmental and European Union funding lines will each prove crucial, as will national and multilateral programmes. Given its relatively limited investment in space, Europe is more than ever challenged to avoid unsustainable duplication. Non-discriminatory access to publicly funded infrastructure must also be ensured.

**SMEs are crucial to innovation and to exploring new market opportunities.** They perform a strong role in the development of new applications and services. Both EU and ESA Programmes successfully encourage participation by SMEs.

The EC is increasing its expenditure on space. During 2007-2013, it will dedicate over €2.8bn to space applications and activities. Community funds, including those managed through ESA programmes, are governed by the EU Financial Regulation on the basis of open competition.

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<sup>13</sup> The Radio Spectrum Policy Group Report and Opinion of 25 October 2006

<sup>14</sup> 'Putting knowledge into practice: A broad-based innovation strategy for the EU' (COM(2006) 502)

Member States invest a little under €3bn annually through ESA, and a similar amount in national programmes. ESA programmes are governed by the industrial policy principles established in the ESA Convention, in particular by exploiting competitive bidding while distributing industrial contracts in proportion to funding from Member States (“fair return”). This provides governments an incentive to invest in European R&D space programmes and may contribute to maintaining competing suppliers within Europe, limiting the risk associated with the emergence of monopolies. It has enabled the leveraging of funds, competitive industries and the convergence of national priorities. It has, however, limited rationalisation of facilities within prime contractors and limited specialisation among suppliers of sub-systems.

With the objective to improve further the efficiency, specialisation and competitiveness of European industry and after an assessment of the most recent reform, the process of introducing additional flexibility into the ESA rules should continue to develop, taking into account in particular the anticipated expansion of ESA's membership.

## 6. GOVERNANCE

### 6.1. Institutional framework

**The EU will use its full potential to lead in identifying and bringing together user needs** and to aggregate the political will in support of these and of wider policy objectives. It will ensure the availability and continuity of operational services supporting its policies. It will contribute to the development, deployment and operation of corresponding European space infrastructure, while making maximum use of existing and planned assets available to Europe, including those of EUMETSAT<sup>15</sup>. Community investment has been made under existing competences and has been additional to that of the Member States and this should continue. The newer EU members are keen to expand the benefits of space to their societies and economies; several are applying for full membership of ESA.

**ESA and its Member and Co-operating States will develop space technologies and systems, supporting innovation and global competitiveness and preparing for the future.** Their activities will focus on exploration of space and on the basic tools: access to space, scientific knowledge and technologies. They will pursue excellence in science and support the technological preparation and validation of space systems responding to user needs, including those of EU policies. Accordingly, for implementing the R&D space component programmes which it funds, the EU will rely on the management and technical expertise of ESA, which will coordinate other relevant agencies and entities in Europe.

**The different approaches, separate legal processes and divergent membership of the EU and ESA can lead to cumbersome decision making processes,** as experience to date has shown in GALILEO. The Framework Agreement has provided significant advances in the working between the EC and ESA, and with the Member States, in policy development. The Agreement will be assessed and improved if required.

**A clear framework to ensure efficient policy making and programme management is essential** for the government bodies involved and for the sector's investors and users. This framework should continue to encompass activities in which Member States would participate optionally under intergovernmental arrangements, while drawing on additional resources from

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<sup>15</sup> European Organisation for the Exploitation of Meteorological Satellites

research and, as appropriate, operational Community budgets. Suitable administrative arrangements would be necessary to accommodate all EU and ESA Member States. The EU framework should be explored to see how it could permit such effective coordination arrangements.

**The EC-ESA Framework Agreement provides a solid base for coordination arrangements between intergovernmental and Community actions. As space increasingly will gain an EU dimension the goal remains for the EU and ESA to pursue closer and more efficient cooperation, in particular to develop space systems and sustain associated services responding to relevant EU sectoral policies.**

## **6.2. Coordinated European Space Programme**

**The European Space Programme will become a common, inclusive and flexible programmatic basis for the implementation of all space-related activities.** EUMETSAT and other relevant entities will be associated in this process. Each project in the Programme remains subject to the legal and financial constraints of the body funding it. The role of the private sector in the development of products and services will be maximised; risk-sharing public private partnerships will be explored wherever possible. Preliminary elements of the Programme are contained in a document associated with this Policy.

**Europe needs consistently to achieve maximum complementarity and transparency among all space programmes, while avoiding both the creation of monopolistic structures and overcapacity. Member States should continue to orient their national programmes towards shared European objectives. Users should be a driving force for the process.**

## **6.3. International relations**

**Europe needs to remain an indispensable international partner providing first-class contributions to global initiatives and exerting leadership** in selected domains in accordance with European interests and values. Within an open attitude towards cooperation, Europe must take judgements on when to rely on partners and where to retain independence. Europe will assess opportunities for cooperation according to: the access they bring to complementary capabilities or to markets; a fair sharing between partners of efforts, costs and risks; their contribution to EU external policies, particularly sustainable development, cooperation with developed countries, stability and humanitarian aid, with particular focus on Africa and the European Neighbourhood; and their relevance to programmatic priorities. In pursuing these objectives it is fully committed to comply with UN Treaties and Conventions.

The EU will take the lead in the overall representation of applications programmes for its policies (in particular GALILEO and GMES), while ESA will take the lead in the overall representation of Europe on programmes in the areas of science, launchers, technology and human spaceflight, each in consultation with the other and with Member States and, as appropriate, other relevant partners such as EUMETSAT.

## **Annex 1: Key actions**

The implementation of the European Space Policy during the short-term will involve a number of specific actions. These have been identified and are listed below.

- (1) During 2007, the Commission will draw up an action plan on the basis of the public response to its Green Paper on **GALILEO** applications; and will also propose the appropriate legal and managerial framework to address the requirements of international partners, while safeguarding European interests.
- (2) The first three operational **GMES** services covering land, marine and emergency response will enter pilot phase by 2008, funded under FP7. The Commission will make proposals by 2009 on the programmatic and institutional framework for a sustainable GMES system, after close consultation with stakeholders. ESA will continue to coordinate and implement the development of the GMES space infrastructure in line with identified needs of service users and by 2008 will also propose, in close cooperation with EUMETSAT, activities for **Meteosat Third Generation**.
- (3) On **integrated space applications**, ESA and Commission will propose new R&D projects, including integration with terrestrial systems, before end-2008. SESAR, the Single European Sky Air Traffic Management Research Programme will represent an example of structured demand for integrated services.
- (4) The EU will invest through FP7 on development of integrated **satellite communications** networks and services, to ensure interoperability with terrestrial networks for new market opportunities. ESA will invest in new technologies, system design capabilities and innovative services in the framework of its telecommunications R&D programme.
- (5) The different actors concerned with **security and defence** will continue to implement the 'ESDP and Space' Roadmap<sup>16</sup> and will set up a mechanism to exchange information and identify opportunities for increasing coordination and synergy. Before end-2007, the EU Council will identify the requirements within the ESDP framework relevant to GMES services dedicated to security users. ESA will propose a programme to develop common security technologies and infrastructures.
- (6) On **space science and technology**, ESA will prepare funding proposals in support of the Cosmic Vision Programme by 2008 and propose new technology R&D activities, in coordination with the EC through FP7, including to reduce dependence on critical technologies from non-European suppliers.

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<sup>16</sup> 'Initial roadmap for achieving the steps specified in the European Space Policy: ESDP and Space' (9505/05)

- (7) Europe will pursue the effective exploitation and utilisation of the **International Space Station** from 2007 onwards based on the launch of Automated Transfer Vehicle-based services and the Columbus module. By 2008, ESA will produce proposals for the involvement of Europe in the **international exploration endeavour** presenting options in planetary exploration and in cooperative development of human transport capabilities.
- (8) ESA will prepare scenarios and propose programmes to develop technologies for **next generation launchers** through 2008, while supporting the exploitation of existing systems. During 2007, the Commission will evaluate the benefits of negotiating reciprocal opening of public sector markets in its dialogues with major space partners.
- (9) The Commission envisages to ask the European standards organisations to make a systematic assessment of necessary future **standardisation** in support of the regulatory framework; intends to evaluate the need to legislate at European level to achieve the **control of satellite-derived data** dissemination or other harmonisation of legislation; further encourage the move to a flexible, market based approach for spectrum allocation and to encourage pan-EU approaches to **spectrum use**; and to discuss with Member States and international partners how **export control regulations** can be better streamlined.
- (10) The Commission and ESA will propose to the Member States by 2008 a **coordination mechanism covering all programmes**, to operate in close coordination with EUMETSAT and other relevant entities, with a view to reinforcing and regularly updating the European Space Programme.
- (11) The EC-ESA **Framework Agreement** may be complemented as needed on the basis of an evaluation of experience to date. In addition, the Commission and ESA are conducting an **appraisal of the main possible cost-efficient scenarios** for optimising the organisation of space activities in Europe and adapting the EU-ESA relationship accordingly, in accordance with the request made by the 'Space Council' at its second meeting in June 2005.
- (12) The EU, ESA and their Member States will establish a coordination mechanism **on international relations** by end-2007, associating other relevant entities as appropriate, and develop a joint strategy for international relations in space by the end of 2008.

## Annex 2: Glossary

Ariane	Europe's heavy payload space launcher. There have been several versions of the launcher from the first in 1979 to the present day Ariane 5.
ATV	Automated Transfer Vehicle: multipurpose support spacecraft under development by ESA to be launched on Ariane 5 in order to transport supplies and fuel to the International Space Station
CFSP	Common Foreign and Security Policy, established and is governed by Title V of the Treaty on European Union.
Columbus	The European Space Agency's multifunction laboratory and largest contribution to the International Space Station.
Cosmic Vision	ESA's long-term plan for space science.
CSG	Centre Spatial Guyanais, Europe's spaceport operated by Centre National d'Etudes Spatiales (CNES) under an agreement with the European Space Agency. Strategic facility aimed at providing Europe with access to space with the optimal geographical conditions for geostationary launches.
EC-ESA Framework Agreement	Framework Agreement between the European Community and the European Space Agency: approved on the EC side by Council Decision (12858/03 RECH 152 7 October 2003); came into force May 2004.
EGNOS	European Geostationary Navigation Overlay Service, an augmentation signal to work in conjunction with the US Global Positioning System (GPS) and the Russian Global Orbiting Navigation Satellite System (GLONASS) military navigation satellite systems.
ESDP	European Security and Defence Policy.
'ESDP and Space'	Council 11616/1/04 ESDP and Space Roadmap' Initial roadmap for achieving the steps specified in the European Space Policy: ESDP and Space' (9505/05 dated 30 05 2005)
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites, an intergovernmental organisation established by Convention. It currently has 20 members and 10 cooperating states
European Security Strategy	'A secure Europe in a better world – The European Security Strategy'; approved by the European Council on 12 December 2003.
FP7	The Seventh EU Framework Programme for Research and Technological Development

GALILEO	Europe's global radionavigation satellite system. Joint EU/ESA development composed of a constellation of 30 satellites in medium Earth orbit. GALILEO will provide users with highly accurate timing and positioning services.
GEOSS	Global Earth Observation System of Systems. The purpose of GEOSS is to achieve comprehensive, coordinated and sustained observations of the Earth system, in order to improve monitoring of the state of the Earth, increase understanding of Earth processes, and enhance prediction of the behaviour of the Earth system.
GMES	Global Monitoring for Environment and Security GMES is a joint EU/ESA initiative combining space and in-situ observing systems to support European goals regarding sustainable development and global governance. (see GMES: From Concept to Reality' – COM(2005) 565 final (10.11.2006)).
GNSS	Global Navigation Satellite System, a generic term for satellite systems providing global positioning and timing services.
GSA	GNSS Supervisory Authority, created by an EU Council Regulation to managing the public interest in the Galileo project.
INSPIRE	'INfrastructure for SPatial InfoRmation in Europe', European Commission Proposal for a Directive.
ISS	International Space Station: a research laboratory orbiting the Earth, currently being built through an international partnership.
Living Planet	ESA's long-term programme for Earth science.
Meteosat	METEORological SATellite, Europe's geostationary weather geostationary satellite system, developed by the European Space Agency and now operated by EUMETSAT.
Partnership for Growth and Jobs	See Lisbon Action Programme for Growth and Employment, "Working Together for Growth and Jobs: a New Start for the Lisbon Strategy" COM(2005) 24, 2.2.2005.
RSPG	Radio Spectrum Policy Group, see Commission Decision No 2002/622/EC of 26 July 2002 establishing a Radio Spectrum Policy Group [Official Journal L 198 of 24.07.2002]
SESAR	Single European Sky Air Traffic Management Research Programme
Soyuz	Russian space launcher being introduced to CSG under agreements between CNES, the Russian space agency and ESA.

Space Council	The concomitant meeting of the Competitiveness Council of the EU and the Ministerial Council of the ESA, as established by the EC-ESA Framework Agreement.
Vega	Small launcher currently under development by ESA, designed to place 300 to 2000 kg satellites into low-Earth orbit.